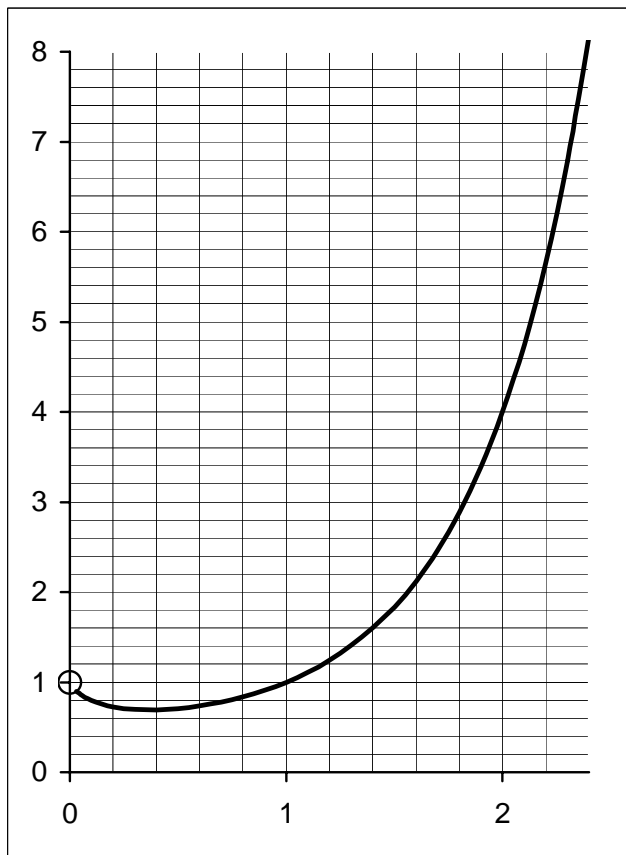


Computing the Derivative Graphically and Numerically

1. Let $y = f(x) = x^x$
 - (a) Draw a line tangent to the curve at the point where $x = 2$. Estimate the slope of this tangent line.
 - (b) Set up the difference quotient $\frac{f(2+h) - f(2)}{h}$ for this function.
 - (c) Complete the table below.



h	$\frac{f(2+h) - f(2)}{h}$	h	$\frac{f(2+h) - f(2)}{h}$
1		-1	
0.1		-0.1	
0.01		-0.01	
0.001		-0.001	
0.0001		-0.0001	

- (d) Estimate $f'(2) = \lim_{h \rightarrow 0} \frac{f(2+h) - f(2)}{h}$ using the table values from part (c). Compare your result to the slope estimate you made in part (a).